increasing attention due to their intriguing photophysical and biological properties. TLD-1433 Ru(II) complex is the first inorganic complex (not belonging to the classes of porphyrins, chlorins and phthalocyanines) to enter phase II clinical trials as an PS for PDT against bladder cancer.
OBJECTIVES
Study properties of Rubpy and Rubpe and their ability to bind and photooxidize biomolecules in order to correlate the PS-biomolecule interaction and photodynamic efficiency.
MATERIALS AND METHODS
UV-Vis spectrophotometer was used to study properties of PS such as absorption spectra in organic solvent and aqueous solution as well as determination of pka values. Fluorescence spectroscopy was used to evaluate interaction of Rubpe and Rubpy with lipids (liposomes made of DMPC) and proteins (BSA).
DISCUSSION AND RESULTS
Rubpe exhibited binding constant (Kb) value 2.5 times more than Rubpy in liposomes made of DMPC. Also, the interaction of Rubpe with BSA (protein) were larger compared to Rubpy. Among the 2 PS studied, one of them presents an ethylene group separating two pyridine rings, providing more hydrophobicity to the compound which probably increase PS interaction to biomolecules. Studies of photosensitization eukariotic cells with both compounds are ongoing in order to correlate the stronger interaction of Rubpe and the phototoxicity.
CONCLUSION
The ethylene group added between the pyridine rings increases the ability of PS to interact and photo-oxidize biomolecules such as lipid and protein. It may improve photodynamic effects.
Keywords: Photodynamic Therapy, Ruthenium complex, biomolecule interaction

08951 - Poster Session

EB.17 - How to make protoporphyrin IX more efficient?
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INTRODUCTION: Protoporphyrin IX (PpIX) is a derivative of ALA (5-aminolevulic acid) an intrinsic photosensitizer (PS) of the human body. PpIX is highly fluorescent, however it photobleaches rapidly under production of singlet oxygen [a] which makes PpIX an efficient FS used in photochemotherapy. The affinity of PpIX for diseased tissues can be improved by the use of carriers [b] . OBJECTIVES: To study the interaction between PpIX and Bovine Serum Albumin (BSA) to be used as a carrier justified by its similarity with Human Serum Albumin (HSA) that has affinity to cancer cells [b] . METHODOLOGY: Optical absorption and fluorescence emission spectroscopy, particle size and zeta potential were performed to characterize PpIX and its complexes with BSA. Langmuir monolayers containing Dipalmitoylphosphatidylcholine (DPPC) were used as a model to study the interaction between both PpIX and PpIX-BSA complex with biological membranes. All experiments were carried out in acidic (4.5) and physiological (7.3) pH buffer solutions. RESULTS: Changes in the profile of the optical absorption spectra and fluorescence emission show that BSA binds to PpIX. These photophysical changes do not impair PpIX photochemical efficiency. Particle size measures showed the formation PpIX-BSA complexes depending on the BSA concentration with sizes ranging from 5-1000 nm at pH 4.5 and from 3-400 nm at pH 7.3. The formation of the complex was favored at pH 4.5, close to the BSA isoelectric point. Surface pressure (π–A) curves measured through the Langmuir monolayers show that both porphyrin and its albumin complex interact with the DPPC monolayer. CONCLUSION: PpIX binds to BSA with enhanced photophysical properties. Both PpIX and PpIX-BSA interact with the cell membrane model suggesting enhanced performance of PpIX as PS. a LEE, H.-S.; LEE, J.-B.; YUN, S. J.; et al. Spectrofluorometric Determination of Protoporphyrin IX in Cells Using Acridine as Internal Standard. Bull. Korean Chem. Soc., v. 27, n. 7, p. 1067–1070, 2007. b ELSADEK, B.; KRATZ, F. Impact of albumin on drug delivery — New applications on the horizon. Journal of Controlled Release, v. 157, n. 1, p. 4–28, jan. 2012.
Keywords: Protoporphyrin XI, BSA, Langmuir Monolayer
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08594 -

EB.18 - Photodynamic therapy associated with ionizing radiation in the treatment of triple-negative breast cancer cells
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INTRODUCTION
Breast cancer is the most common cancer for women worldwide. According to the World Health Organization, it is considered the 5 th leading cause of death from cancer. Triple-negative breast cancer (TNBC) is a subtype of this disease that represents around 20% of all invasive breast cancer, whose main characteristics are resistance to conventional treatments, such as exposure to ionizing radiation (IR). On the order hand, the photodynamic therapy (PDT) using porphyrins and their derivatives has been described in the literature as a potential therapy against cancer.
OBJECTIVES
Thus, our goal in this work was to associate PDT and IR in the treatment of TNBC.
MATERIALS AND METHODS
MDA-MB-231 cells at a concentration of 2x104 cells were submitted to PDT using TMPyP porphyrin (30 μM) and a red light (660 ±11 nm) with fluences of the 23 and 57.5 J/cm 2 (57.3 mW/cm 2). Immediately post-PDT, cells were divided into groups: non-treated (control), only IR and PDT associated with IR (PDT57+IR and PDT23+IR) and then, exposed to IR with a dose of 2.5 Gy. Past 24-h of the PDT-session, the cell viability, clonogenicity and total glutathione were verified.
DISCUSSION AND RESULTS
Cells exposed to IR not presented statistically significance difference compared to the control group. However, treated groups showed around 38% lower cell viability in relation to the control and IR groups. For the clonogenic assay a reduction of the approximately 65% was observed between IR and treated groups. Regarding to the total glutathione, all groups showed an increase when compared to control group. Nonetheless, no were identified differences between IR and treated groups.
CONCLUSION
Taken together, our results indicate that PDT associate with IR may be an ally in TNBC treatment.
Keywords: radiotherapy, combined therapy, cancer
Supported by: CNPQ

08125 -

EB.20 - Combination Therapy of Antimicrobial Photodynamic Inactivation: Potential of Nanoparticles and Plant Based Compounds
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